education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

FURTHER EDUCATION AND TRAINING

GRADE 12

GEOGRAPHY MAP WORK (TASK 1)
MAP WORK/ GIS
MARCH 2024

MARKS: 60
TIME: 1 HOUR

NAME AND SURNAME	
SCHOOL	
GRADE	

QUESTION	Q1	Q2	Q3	TOTAL
MARKER				
MODERATOR (SCHOOL)				
MODERATOR (CLUSTER)				
MODERATOR (DISTRICT)				

This question paper consists of 11 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of 11 pages including the cover page.
2. Answer all the questions on this question paper.
3. Use blue/black ink for all your responses.
4. This is a fill-in-question paper – use the spaces provided for your responses.
5. You are provided with an A3 map consisting of a 2527 DB HARTBEESPOORT DAM (1:50 000) topographic map and a (1:10 000) orthophoto map. Hand over the map after writing this task back to the invigilator.
6. Give units of measurement for all calculations and answers.
7. Show all calculations.
8. Write neatly and legibly.

GENERAL INFORMATION ABOUT HARTBEESPOORT DAM

Hartbeespoort Dam is an arch-type dam situated in the North West Province of South Africa. It lies in a valley to the south of the Magaliesberg mountain range and north of the Witwatersberg mountain range, about 35 kilometres north west of Johannesburg and 20 kilometres west of Pretoria.

Opened: 1923
Height: 59 m
Location: North West Province
Total capacity: 195,000,000 m3
Owner(s): Department of Water Affairs
Surface area: 2 062.8 ha
Purpose: Irrigation and domestic use

[https://en.wikipedia.org/wiki/Hartbeespoort_Dam]

Question 1: Calculations

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write the letter (A-D) in the space provided.

1.1.1 The map index which is directly south of the map of Hartbeespoort dam is …

A. 2527 DB
B. 2725 AD
C. 2527 DD
D. 2527 CC

(1 x 1) (1)

1.1.2. The scale of 1: 50 000 shows a … area and … detail as it is a smaller scale than 1: 10 000.

(i) larger
(ii) smaller
(iii) less
(iv) more

A. (i) and (iii)
B. (i) and (iv)
C. (ii) and (iii)
D. (ii) and (iv)

(1 x 1) (1)

1.1.3 Hartbeespoort is situated in the … province.

A. Gauteng
B. Mpumalanga
C. North west
D. Free State

(1 x 1) (1)

1.1.4 The highest point in Kosmos in block **C2** is represented by a…

A. trigonometrical station
B. contour line
C. spot height
D. benchmark

(1 x 1) (1)

1.2 **Map Calculations**

1.2.1 What does **27** on the map index 2527 DB represent?

_____ (1 x 1) (1)

1.2.2 Give the coordinates of the school in block B2.

_____ (2 x 1) (2)

1.2.3 Refer to the topographic map. Use the information below to calculate magnetic declination for the current year.
Difference in years = 7 years

Mean annual change = 8'

Total change: _____

_____

MD for 2024: _____

_____

_____ (3 x 1) (3)

1.2.4 Determine the true bearing of spot height **1417** in block **E4** from spot height **1399** in block **E5**.

_____ (1 x 2) (2)

1.2.5 Refer to a big rectangular block that represents recreational facilities on the orthophoto map. Calculate the Area covered by the recreation facility in $\mathbf{m^2}$ if the length is **2.9 cm**.

$$\mathbf{Area = L \times B}$$

_____

_____

_____

_____

_____ (3 x 1) (3)

1.2.6 Refer to spot height 1521 in block **B3** and Trig beacon 66 in block **A5**.

i. Determine the difference in height between the points.

_____

_____

_____ (1 x 2) (2)

ii. What is the distance in m between the two points?

_____

_____ (1 x 1) (1)

iii. Use the answers in 1.2.6. (i) and 1.26 (ii) to determine the average gradient between the 2 points

AVERAGE GRADIENT = $\frac{\text{VI}}{\text{HE}}$

_____

_____

_____

_____ (2 x 1) (2)

TOTAL QUESTION 1: [20]

Question 2: Map interpretation

2.1 Various options are provided as possible answers for the following questions. Choose the answer and write the letter (A-D) on the space provided. Refer to Schoemansville in block **B4**.

2.1.1. The name of the wind that blows from the mountain to Schoemansville at night is…

A. Anabatic wind
B. Katabatic wind
C. Gusty wind
D. Berg wind

(1 x 1) (1)

2.1.2. The weather condition associated with the wind mentioned in question 2.1.1. is

A. Air pollution
B. High temperature
C. Frost
D. Terrestrial Radiation

(1 x 1) (1)

2.1.3. The reason for the air to descend from the mountain to the valley floor is…

A. Coriolis force
B. Pressure Gradient Force
C. Gravitational Force
D. Dense air

(1 x 1) (1)

2.2 Refer to Melodie **C5** and **C6** and Nederburg Estate **A4** and **A5**. These two settlements experience different temperatures during the day.

2.2.1. Identify this weather phenomenon.

_____ (1 x 1) (1)

2.2.2. Suggest **ONE** strategy that the Melodie municipality may implement to reduce the temperatures in the city.

_____

_____ (1 x 2) (2)

2.2.3. What would be the dangers that will be faced by the following areas during torrential rainfall:

a) Settlement located South of Melodie.

_____

_____

b) Cultivations in block **A2**.

_____

_____ (2 x 2) (4)

2.3 Study the river in block **B2**.

2.3.1. Determine the direction of flow of the river in block **B2**.

_____ (1 x 1) (1)

2.3.2. Give a reason for your answer to Question 2.3.1.

_____

_____ (1 x 2) (2)

2.3.3. Refer to the river in block **B3**. Identify the underlying rock structure.

_____

_____ (1 x 2) (2)

2.3.4. Give a reason for your answer to Question 2.3.3.

_____

_____

_____ (1 x 2) (2)

2.3.5. Discuss the negative impact of Hartbeespoort Dam on the nearby areas.

_____

_____

_____ (1 x 2) (2)

2.3.6. Hartbeespoort is most likely to be visited by tourists.

i. During which year was it opened?

_____ (1 x 1) (1)

ii. Name the city closer to Hartbeespoort Dam.

_____ (1 x 1) (1)

iii. Provide two reasons visible from the map that make Hartbeespoort Dam a tourist attraction.

_____

_____

_____

_____ (2 x 1) (2)

TOTAL QUESTION 2: [23]

Question 3: GIS (Geographic information systems)

3.1 Various options are provided as possible answers for the following questions. Choose the answer and write the letter (A-D) on the space provided.

3.1.1. The following is true about Orthophoto:

A. Contour interval 5m, pixel illustrations, raster data
B. Contour interval 5m, pixel illustrations, vector data
C. Contour interval 20m, symbol illustrations, raster data
D. Contour interval 20m, symbol illustrations, vector data

(1 x 1) (1)

3.1.2. The concept of identifying distance around a certain geographical object by means of a GIS is known as …

A. Data-integration
B. Statistical analysis
C. Query
D. Buffering

(1 x 1) (1)

3.1.3. The integration of data from different maps into one map is known as…

A. Placing maps on top of another
B. Data manipulation
C. Data integration
D. Data capture

(1 x 1) (1)

3.2. Refer to the topographic map.

3.2.1. Differentiate between raster and vector data.

_____

_____

_____

_____

_____ (2 x 1) (2)

3.2.2. Classify the topographic map as raster or vector data.

_____ (1 x 1) (1)

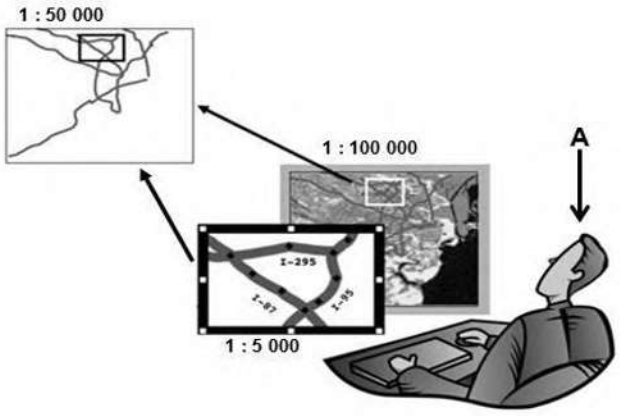
3.2.3. Give 2 examples of vector data in block B5.

_____

_____

_____ (2 x 1) (2)

3.3. Study the picture below, showing data integration.



3.3.1. Define the term *data integration*.

_____

_____ (1 x 2) (2)

3.3.2. Identify the GIS component **A**.

_____(1 x 1) (1)

3.3.3. Provide **ONE** reason why the GIS component (answer to question 3.3.2) is important.

_____

_____ (1 x 2) (2)

3.3.4. Data integration is illustrated in the sketch. Give **ONE** reason to support this statement.

_____

_____ (1 x 2) (2)

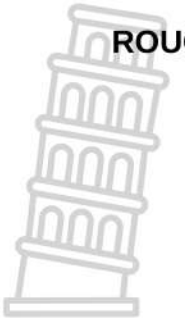
3.3.5. State **TWO** possible data layers that a farmer can consider to determine the site of his farm.

_____

_____ (2 x 1) (2)

TOTAL QUESTION 3: [17]

GRAND TOTAL: 60



ROUGH WORK (DO NOT DETACH)